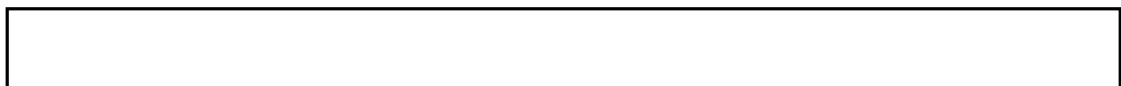


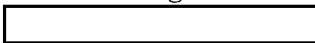
NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER **R & D NEWS NOTES**

TECHNICAL SERVICES and SUPPORT GROUP



Vol. 2, No. 3

June, 1969

The following items are of general interest to those concerned with photo interpretation and related intelligence production. They are published by the Technical Services and Support Group with the objective of creating better communication between operational personnel and those engaged in R&D. Questions, comments and suggestions are encouraged and should be sent to Editor, R&D News Notes, Room 5S-453 

More on Imagery Without Emulsion

The paper backing sheet used in making viewgraphs was recently identified as a potential source of unauthorized disclosure of classified information. This unsensitized, exposed material was found to record imagery, a property which 1) was not previously recognized and 2) posed a threat to security if disposal of this waste were not properly controlled.

At NPIC viewgraphs are made by contact printing a three-sheet assemblage before an ultraviolet light source. The sheets are: (1) the top, which is nearest to the source and serves as a master transparency; (2) the center, a diazo film which records the master imagery; and (3) the opaque bottom, which serves as a backing sheet. After exposure, the top and center sheets are retained while the bottom one is discarded; a new backing sheet is used for each exposure. The backing sheet was previously thought innocuous because it consisted either of an aluminum foil-backed paper or a rice paper, and these were not normally recognized as light sensitive materials. However, an earlier investigation by the Exploratory Laboratory indicated the tendency of unsensitized film base to record imagery (see "Imagery Without Emulsion," in January 1969 issue of R&D News Notes). The question arose of whether or not the viewgraph backing sheet behaved similarly.

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At the request of the Graphics Branch/RD/PSG, the Exploratory Laboratory determined the probability that imagery could be detected in the discarded backing sheets. Ten viewgraphs were made by Graphics Branch personnel using randomly selected letters of the alphabet and "worst case" values for exposure and image size that lay within the limits of the production process. Thirteen observers viewed the backing sheets from these exposures together with ten blank backing sheets. Viewing was conducted under ultraviolet illumination with a random presentation of imaged and blank sheets. Statistical analysis of observer responses indicated a .999+ probability of detecting imagery on the paper side of the aluminum foil-paper backing sheet, a virtual certainty. On a percentage basis, observers correctly detected the presence of imagery 97% of the time and they correctly identified imagery content 84% of the time. No imagery was found on the aluminum or rice paper surfaces.

As a result of this work it was recommended that exposed backing sheets be treated as classified waste and that they be disposed of accordingly.

The project scientist is [REDACTED]

[REDACTED] This article is [REDACTED]

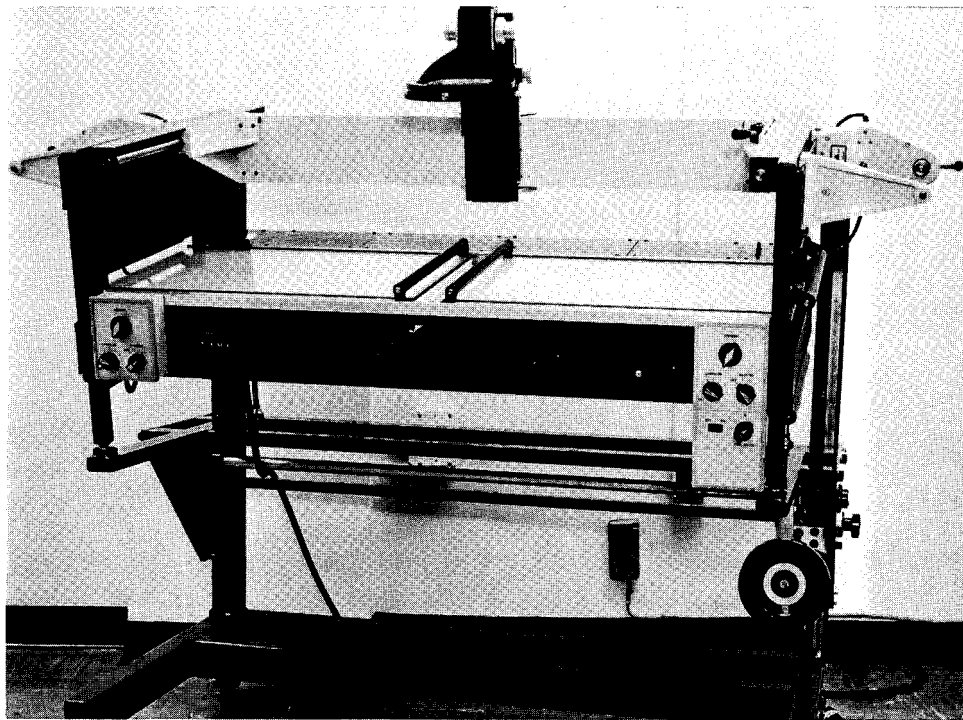
Rear Projection Screens

Under an NPIC sponsored contract, the [REDACTED] has been developing a new type of glass rear projection screen. Eight sample screens were recently made--each having different combinations of measured characteristics. These screens will soon be subjectively evaluated in a test to be conducted at NPIC [REDACTED]. Based on preliminary observations, these screens are superior to any other commercially available rear projection screens. An important discovery made under this contract is that screen properties can be varied to match the characteristics of the viewer with which the screen will be used.

This project represents the combined efforts of three parties. [REDACTED] furnishes the technology to produce an advanced optical component, [REDACTED] provides its human factors experience to conduct an evaluation of the screen, and NPIC monitors the contract, furnishes engineering support, and provides subjects for evaluation. While such combined efforts increase the complexity of control they have the important advantage of allowing each party to contribute its best abilities. Another important aspect of this project is that it will compile human factors data that is current and that is obtained from the same subjects who will later be using the end product.

[REDACTED] is the Project Officer. The results of this work will be unclassified, but Agency association with both [REDACTED] is classified Confidential.

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Light Table Under Test

X1 [] has designed and built a 15" x 40" split format light table which they intend to market to the intelligence community. NPIC borrowed one of the prototypes for a month to evaluate its suitability for NPIC use. Included on the light table are such features as, optional dual range power drive, 10" diameter roll handling capability, adjustable loop take-up mechanism, and an overhead carriage for x and y translation of a microscope. In addition, the tilt and elevation of the table is adjustable and the intensity of the light source is variable.

The Test and Evaluation Branch of the Engineering Support Division/TSSG/NPIC is conducting the testing and will publish a report on its findings. The report will be made available to interested government agencies on request. For additional information, contact [] Chief of the Test and Evaluation Branch (Room 4N-411, IDS Code 143,

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"Great science nobly labored
to increase the people's joys
But every new invention seemed
to add another noise."

...Sir Alan Patrick Herbert

It is important that consideration be given to the reduction of noise generated by equipment being developed for use at NPIC. Prolonged exposure to loud noises can result in temporary, or even permanent, partial loss of hearing. The safe limit of noise depends on the frequency of the noise, the duration of exposure, and whether the noise is a pure tone (one frequency) or a mixture of frequencies. Fortunately, it is not difficult to maintain the noise level of most equipment below these limits. However, for equipment that is located in the vicinity of two or more people for long periods of time, noise levels must be such that they do not interfere with voice communications and do not produce annoyance and fatigue effects. This allowable noise level is often less than half of that required for safety considerations. More information concerning this subject will soon be published for inclusion in the Human Engineering Design Guide for Image Interpretation Equipment. This information on noise will provide sound data in terms of sones and phons as well as decibels. Sones and phons are measurements of sound that correspond more closely than decibels to the human subjective loudness of sound. In other words, a sound that measures 4 sones would seem to be twice as loud as one that measures 2 sones. The [redacted] [redacted] sound recorder currently utilized by the Test and Evaluation Branch of the Engineering Support Division is calibrated in sones and phons.

For more information, contact [redacted] (Room 5S-453, IDS Code

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